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SERIES E: OVERALL NETWORK OPERATION, TELEPHONE SERVICE, SERVICE OPERATION AND HUMAN FACTORS

International operation – Maritime mobile service and public land mobile service

Maritime communications – Ship station identity

Recommendation ITU-T E.217

International Telecommunication Union

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Recommendation ITU-T E.217

Maritime communications – Ship station identity

Summary

For the purposes of international public correspondence telecommunication, the ship station identity is now only relevant for those existing systems that have the ship station identity embedded in the numbering scheme as illustrated in Annexes A and B. For future systems that will not embed the ship station identity in their numbering scheme, the ship station identity ceases to have any relevance for public correspondence telecommunication purposes.

This edition of ITU-T E.217 includes relevant text from ITU-T E.210, which document it cancels and replaces. In addition, ITU-T E.217 reflects changes that have occurred within the existing family of services provided by Inmarsat that impact the provision of global maritime distress and safety system (GMDSS).

For historical accuracy, this revised version also reflects details of the provision of Inmarsat services prior to the expansion of the numbering plan specified in ITU-T E.164 from a maximum of 12 to 15 digits.

History

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FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

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Introduction

The advent of a mobile satellite communication system designed to serve the maritime community, initially made it possible for ships to participate in the automatic international telex service and the automatic international telephone service. This gave rise to the need for a unique international identity for ship stations.

In anticipation of other communications methods becoming available to connect the maritime community with public telecommunication networks worldwide, it was decided to standardize a form of identification for ships for telecommunications purposes usable over both terrestrial radio and satellite systems. It was also recognized that unique station identities would be an integral component of the automated distress and safety communication functions underpinning the development of the global maritime distress and safety system (GMDSS). The ship station identity was therefore established as part of the maritime mobile service identity concept, which includes other elements of maritime communications (see the relevant *Radio regulations* [ITU RR] and ITU-R Recommendations). The intention was that there would always be a direct and obvious link between ship station identities and international telecommunications numbers in order to facilitate the control of distress communications.

Satellite systems have proved they are able to resolve the various billing, routing, charging and signalling aspects in a manner compatible with the networks serving the rest of the communications environment, although initially it did not prove feasible to establish single-stage connection procedures to ships over terrestrial radio paths that can satisfy all these aspects. Moreover, mobile satellite systems are now designed to offer service to a number of different sectors, not just the maritime sector, and as such cannot support embedding the ship station identity in the international telecommunications number of the ship. Embedding the ship station identity in the international telecommunication number is considered unreasonable and contrary to the principles given in [b-ITU-T E.190] with regard to the efficient and effective use of numbering resources.

For the purposes of international public correspondence telecommunication, the ship station identity is now only relevant for those existing systems that have the ship station identity embedded in the numbering scheme. For those later implementations that will not embed the ship station identity in their numbering scheme, the ship station identity ceases to have any relevance for public correspondence telecommunication purposes. For illustrative purposes, the use of the ship station identity in the numbering scheme associated with the international telephone service and the international telex service provided by means of the Inmarsat maritime mobile satellite system is shown in Annexes A and B.

This Recommendation also specifies a method by which an internationally unique ship station identification may be assigned to all the ships participating in maritime mobile services.

For ships participating in the GMDSS, link establishment between ship station identity and any telecommunication number associated with that ship remains essential. If the link cannot be readily ascertained by visual inspection of the number, it must be available through reference to a suitable database.

Recommendation ITU-T E.217

Maritime communications – Ship station identity

1 Scope

This Recommendation specifies methods for the use of ship station identities in maritime telecommunications and the relationship with international public correspondence telecommunications.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T E.164] Recommendation ITU-T E.164 (2010), *The international public telecommunication numbering plan*.

[ITU-T F.69] Recommendation ITU-T F.69 (1994), *The international telex service – Service and operational provisions of telex destination codes and telex network identification codes*.

[ITU-T U.11] Recommendation ITU-T U.11 (1993), *Telex and gentex signalling on intercontinental circuits used for intercontinental automatic transit traffic (type C signalling)*.

[ITU-T U.12] Recommendation ITU-T U.12 (1993), *Terminal and transit control signalling system for telex and similar services on international circuits (type D signalling)*.

[ITU-T Comp E.212] Complement to Recommendation ITU-T E.212 (2004), *List of mobile country or geographical area codes*. Annex to *ITU Operational Bulletin*, No. 803. https://www.itu.int/itudoc/itu-t/ob-lists/icc/e212_685.pdf

[ITU-R M.585-7] Recommendation ITU-R M.585-7 (2015), *Assignment and use of identities in the maritime mobile service*.

[ITU CS and CV] ITU (2015). Constitution of the International Telecommunication Union; Convention of the International Telecommunication Union. In: *Collection of the basic texts adopted by the Plenipotentiary Conference*. Geneva: ITU. http://search.itu.int/history/HistoryDigitalCollectionDocLibrary/5.21.61.en.100.pdf

[ITU MM] ITU (2016). *Manual for use by the maritime mobile and maritime mobile-satellite services (Maritime manual)*. Geneva: ITU Radiocommunication Bureau. http://handle.itu.int/11.1002/pub/80db9f92-en

[ITU RR] ITU (2016). *Radio regulations*, 5 vols. Geneva: ITU. http://handle.itu.int/11.1002/pub/80da2b36-en

NOTE – [ITU MM] makes reference to ITU-T and ITU-R Recommendations concerned with the creation and use of maritime mobile service identities and international telecommunication numbers for ships. Attention is also drawn to relevant extracts from the [ITU CS and CV] and to [ITU RR]. (See, for example, [ITU-R M.585-7] and Article 19 of [ITU RR].)

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 coast earth station [ITU RR]: An earth station in the fixed-satellite service or, in some cases, in the maritime mobile-satellite service, located at a specified fixed point on land to provide a feeder link for the maritime mobile-satellite service.

3.1.2 coast station [ITU RR]: A land station in the maritime mobile service.

3.1.3 maritime mobile-satellite service [ITU RR]: A mobile-satellite service in which mobile earth stations are located on board ships; survival craft stations and emergency position-indicating radiobeacon stations may also participate in this service.

3.1.4 maritime mobile service [ITU RR]: A mobile service between coast stations and ship stations, or between ship stations, or between associated on-board communication stations; survival craft stations and emergency position-indicating radio beacon stations may also participate in this service.

NOTE – Examples of conventional maritime mobile (terrestrial) services are high-frequency (HF) maritime service and the very high-frequency (VHF) maritime service (as defined in [ITU RR]).

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 coast station identity: The coast station identification X_1, X_2 ... X_k transmitted on the radio path.

NOTE – In this Recommendation, the term *coast station identity* is intended to also include, for simplicity, *coast earth station identity*.

3.2.2 Ship station identity (based on [ITU-R M.585-7]): A nine-digit numeric identifier that serves to uniquely identify a ship station, and which takes the following format:

$$M_1I_2D_3X_4X_5X_6X_7X_8X_9$$

The initial three digits denote the administration responsible for the ship and are known as the maritime identification digits (MIDs). The value of the first MID has the range 2 to 7. Of the remaining values: 0 has been reserved; 1 is reserved for expansion of the MID range; 8 and 9 are used for other purposes, but with a view to them becoming available for future expansion.

Restrictions may apply with respect to the maximum number of digits that can be transmitted on some national telex and phone networks for the purpose of ship station identification.

3.2.3 ship station number: The number that identifies a ship for access from a public network and forms part of the international number to be dialled or keyed by a public network subscriber.

NOTE – In this Recommendation, the term *ship station* is intended to also include for simplicity, *ship earth station*.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

APC Aeronautical Public Correspondence

BGAN Broadband Global Area Network

DDI Direct Dial-In

GES Ground Earth Station

GMDSS Global Maritime Distress and Safety System

GSPS Global Satellite Phone Service

GX Global Xpress

HF High Frequency

ISDN Integrated Service Digital Network

MID Maritime Identification Digit

PSPDN Packet-Switched Public Data Network

PSTN Public Switched Telephone Network

RCC Rescue Coordination Centre

UHF Ultra-High Frequency

VHF Very High Frequency

5 Conventions

None.

6 The use of the ship station identity

6.1 Every ship shall have a unique ship station identity and that identity should be used in both VHF/UHF (ultra-high frequency), HF maritime and maritime mobile-satellite systems and for telecommunication services;

It is desirable that the ship station number and the ship station identity be related in a simple and unambiguous manner.

The capacity of the ship station identification system shall be sufficient to admit all ships wanting or required to participate in the various maritime mobile services at present and in the foreseeable future.

6.2 The initial 12-digit maximum length (now expanded to 15-digits) of the ITU-T E.164 number format for the international telephone service had to accommodate various system identification and operational functions. When used in conjunction with existing global maritime distress and safety systems (GMDSSs) only six of the 12 digits were available for identifying particular ships. If there was a requirement for a ship station identity of nine digits to be represented in the ITU-T E.164 number, then this was accomplished within six digits. This was achieved by using the first six digits of the ship station identity and giving digits 7, 8 and 9 the value of 0. This combination is known as the ship station identity with three trailing zeros and has been applied to both terrestrial and satellite systems.

6.3 Annex A illustrates the way a ship station identity is used in an international telephone number for the maritime mobile satellite service.

6.4 Guidelines for the assignment of ship station identities are provided in Annex 1 of [ITU-R M.585-7].

7 Assignment of ship station identity maritime identification digits

7.1 Each MID represents a discrete assignable capacity of ship station identities. MIDs were originally assigned to individual countries according to a plan that related assignable capacity of ship station identities to ship population. [ITU RR] make provision for the allocation of an additional MID for a specific administration when necessary.

8 Assignment of ship station identity blocks of numbers

8.1 Blocks of numbers should be assigned to countries so that individual administrations may systematically assign ship station identities within those blocks.

9 Identification of ship geographical region in ship station identities

9.1 The first digit of each ship station identity is intended to identify the geographical region to which the nationality (registry) of the ship relates. Only digits 2 to 7 are used for this purpose to identify the world's regions as follows:

2 Europe

3 North America

4 Asia (except Southeast Asia)

5 Oceania and Southeast Asia

6 Africa

7 South America

Arrangements may therefore be made to systematically assign a ship station identity to each ship as soon as national blocks are allocated. The digits 0 and 1 are allocated for other purposes as indicated in Table l.

9.2 Digits 8 and 9 are not used for identification of geographical regions. However, for maritime VHF/UHF systems and HF maritime, digits 8 and 9 were used in the past to expand network access. The allocation of the first digit of the ship station identity is summarized in Table l.

Table 1 – Allocations of the first digit (X_1) in the ship station identity

First digit (X_1) of ship station identity	Use
0	Group call/coast station identity
1	Reserved for future expansion
2	Europe
3	North America
4	Asia (except South East Asia)
5	Oceania and South East Asia
6	Africa
7	South America
8	Previously used to expand network access
9	Previously used to expand network access

10 Identification of ship nationality within ship station identifiers

10.1 Since blocks of ship station identities are systematically assigned by country, a ship's nationality can be determined by analysing the first three digits of its ship station identity.

10.2 Examples of MIDs for ships are given in Table 2.

Table 2 – Examples of maritime identification digits for ships

Country	Maritime identifications digit	Ship station identity
P	231	from 231 000 000 to 231 999 999
Q	233, 234	from 233 000 000 to 234 999 999
R	236, 237, 238	from 236 000 000 to 238 999 999
S	240 to 249	from 240 000 000 to 249 999 999

11 Group calls

To indicate a group call to a group of ships having a community of interest, $X_1 = 0$, $X_2 = 1$ to 9 and $X_1 = 0$, $X_2 = 0$, $X_3 = 0$, $X_4 = 0$ to 9 are assigned. Such calls may be barred in the public switched network or at coast stations. Control of group calls may also be achieved by the use of special group service access to the coast stations. The group call numbering scheme used in the Inmarsat system is given in Annex A.

12 Coast station identity

To indicate coast station identities in maritime mobile (terrestrial) systems, $X_1 = 0$, $X_2 = 0$, $X_3 = 1$ to 9 are assigned.

13 The global maritime distress and safety system

13.1 The ship station identity is used as the unique reference for ships that participate in a GMDSS. A rescue coordination centre (RCC) is able to use the ship station identity to ascertain information, such as the ship name, call sign, flag state (nationality) and emergency contact details. This is needed both for ships in distress and those that may be able to assist. If the ship telecommunications number does not have the ship station identity embedded in it, then the system operator should provide this information to the RCC by means of access to a database. Such access should be available on a 24 h/day, 7 day/week basis. In systems that have distress priority, this information should be automatically forwarded to an RCC.

13.2 The initial query would be based on the ITU-T E.164 telecommunication number and this should give access to information, such as but not limited to, the ship station identity, the ship name, the ship call sign, flag state and emergency contact details. In the maritime environment, an ITU-T E.164 telecommunication number is specific to one maritime mobile-satellite system. The individual system can be identified from one of its ITU-T E.164 telecommunication numbers and the appropriate database can be interrogated.

Annex A[1]

Telephone/integrated service digital network numbering plan for the mobile-satellite services of Inmarsat

A.1 Introduction

A.1.1 Purpose

This annex specifies a telephone/integrated service digital network (ISDN) numbering plan for mobile earth stations in systems operated by Inmarsat. Such systems may include maritime, land-based and aeronautical satellite systems. The range of mobile satellite systems may also include satellite systems for other applications.

A.1.2 Terminological conventions

The following terminological conventions are used within this annex.

A.1.2.1 ship station identity: As defined in clause 3 of this Recommendation, Article 19 of [ITU RR], ITU-R Recommendations and [ITU-R M.585-7].

A.1.2.2 Inmarsat mobile international number: The number following the international prefix which identifies terminal equipment connected to an Inmarsat mobile earth station for access from a public network.

A.1.2.3 Inmarsat mobile number: The part of the Inmarsat mobile international number that follows the ITU-T E.164 country code allocated to Inmarsat.

A.1.2.4 other terminology: For terminology, such as maritime mobile-satellite service, aeronautical mobile-satellite service and ship earth station, see [ITU RR] and clause 3.

A.1.2.5 on-board identification digits: These digits are the part of the mobile earth station number used for identifying:

– a specific terminal equipment on board;

– a specific mobile earth station.

A.1.3 Basic considerations

The considerations which form the basis of the numbering plan are that:

A.1.3.1 it shall be possible to identify an Inmarsat mobile earth station uniquely from the Inmarsat mobile number;

A.1.3.2 the Inmarsat mobile number should have a format where the same number can be used for access from all types of public networks;

A.1.3.3 different routings can be used for calls to mobile earth stations designed for different Inmarsat systems;

A.1.3.4 administrations and Inmarsat can apply different charging and accounting rates to different Inmarsat systems;

A.1.3.5 the numbering plan should provide capacity for on-board identification or direct access to a specific terminal equipment connected to a mobile earth station, e.g., on board a ship;

A.1.3.6 the numbering plan should support access to multichannel mobile earth stations;

A.1.3.7 the length of the Inmarsat mobile international number should comply with [ITU-T E.164];

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[1] This annex cancels and replaces [b-ITU-T E.215].

A.1.3.8 for maritime satellite applications, the ship earth station numbering plan should support access to several ship earth stations on the same ship within one ship station identity;

A.1.3.9 [ITU RR] make provision for the allocation of additional MIDs for a specific country when necessary;

A.1.3.10 Inmarsat will assign and administer the land identification digits ($L_2I_3D_4$) which are used to identify the country of registry of land-based mobile earth stations.

A.2 Format of Inmarsat mobile international number

The general format of the Inmarsat mobile international number is:

$$CCC\ T_1\ (T_2)\ X_1X_2\ ...\ X_k$$

where CCC is the three-digit ITU-T E.164 code 870 allocated to Inmarsat, to enable the originator of a call to an Inmarsat mobile earth station to dial one unique ITU-T E.164 code for worldwide access and $T_1(T_2)\ X_1\ ...\ X_k$ is the Inmarsat mobile number. The number of T digits will vary be either one or two, according to the particular Inmarsat system involved as exemplified in Table A.1.

A.3 Format of Inmarsat mobile number

A.3.1 General format

The general format of the Inmarsat mobile number is:

$$T_1(T_2)\ X_1X_2\ ...\ X_k$$

where a single or double digit T is used to discriminate between different Inmarsat systems.

The formats used for various Inmarsat systems are defined in Table A.1.

Table A.1 – Value of T digit(s) for various applications

T digit(s)	Application
0	
1	
2	Reserved for future use
3	
4	Ordinary call in Inmarsat-C system (see clause A.3.2)
5	Ordinary call in Inmarsat Aeronautical system (see clause A.3.3)
70-75 and 79	Reserved for future use
77-78	Broadband global area network/global satellite phone service/Global Xpress (BGAN/GSPS/GX)
8	
9	Reserved for future expansion (see clause A.3.5)

A.3.2 Format for Inmarsat-C system

A.3.2.1 Maritime mobile – Ordinary calls

For ordinary calls to ship earth stations in the Inmarsat-C system, the format shall be initially:

$$4\ M_1I_2D_3X_4X_5X_6X_7X_8 \text{ (nine digits)}$$

where 4 corresponds to the T digit and where at least the digits $M_1I_2D_3X_4X_5X_6$ are part of the ship station identity. The digits X_7X_8 may also be part of the ship station identity or be used to discriminate between several ship earth stations on the same ship. In the latter case, X_7X_8 becomes Z_1 and Z_2 and the principle of clause A.8 should be followed.

The number format:

$$4\ X_1X_2X_3X_4X_5X_6X_7X_8 \text{ (nine digits)}$$

where the digit X_1 takes the value 8; this is reserved for future Inmarsat applications.

The length of the Inmarsat mobile number was initially restricted to nine digits, making the length of the Inmarsat mobile international number equal to 12 digits. The maximum length of an ITU-T E.164 number has since been extended to 15 digits.

A.3.2.2 Land mobile – Ordinary calls

For ordinary calls to land-based mobile earth stations in the Inmarsat-C system, the format shall be initially:

$$4\ 9\ L_2I_3D_4X_5X_6X_7X_8 \text{ (nine digits)}$$

where 4 corresponds to the T digit and the digit 9 signifies a land-based mobile earth station and the digits $L_2I_3D_4$ provide land identification digits that are used to identify the country of registry.

The length of the Inmarsat mobile number was initially restricted to nine digits, making the length of the Inmarsat mobile international number equal to 12 digits. The maximum length of an ITU-T E.164 number has since been extended to 15 digits.

A.3.2.3 Group calls

Group call selection in the Inmarsat-C system is achieved using two-stage access procedures which do not conform to the scheme outlined in clause A.7.

A.3.2.4 Extension of the number

For maritime satellite applications, the Inmarsat mobile number used in the Inmarsat-C system may be extended to 12 digits as the numbering capacity of the international network was increased to 15 digits. Clause A.8 proposes a method by which this expansion can be made in order to allow two-number lengths to coexist on the same T digit.

A.3.3 Format for Inmarsat aeronautical system

The general format of numbers in the Inmarsat aeronautical system is as follows:

$$5\ X_1X_2X_3X_4X_5X_6X_7X_8 \text{ (nine digits)}$$

where 5 corresponds to the T digit.

The format of digit X_1 to X_8 ensures the provision of two fundamental requirements for the Inmarsat (aeronautical) mobile number, namely:

– eight-digit primary address for all aircraft; and

– six-digit alternate address and two direct dial-in (DDI) digits for selected aircraft.

A.3.3.1 Primary address

For primary addressing requirements, the number format will be as follows:

$$5\ X_1X_2X_3X_4X_5X_6X_7X_8$$

– T digit = 5;

– For X_1 = 0 to 7,

the digits $X_1X_2X_3X_4X_5X_6X_7X_8$ are the primary address of aircraft earth station, where X_n is the octal digit representing the corresponding 3 bits of the 24-bit International Civil Aviation Organisation (ICAO) technical address, and X_2 to X_8 = 8 or 9 are reserved for future use.

The primary address is applicable to both aeronautical public correspondence (APC) telephony (and other circuit-mode) and APC packet-mode (data) services.

A.3.3.2 Alternate address

In order to provide a DDI capability for certain aircraft, the number format will be as follows:

For $X_1 = 8$,

the digits $X_1X_2X_3X_4X_5X_6Z_1Z_2$ are composed of a six digit alternate address of an aircraft earth station followed by a two digit extension number,

where:

– X_n are arbitrarily assigned digits to uniquely identify a particular aircraft earth station.

– Z_n are DDI digits to uniquely identify individual on-board terminals.

– The alternate address is only to be used for APC telephony (and other circuit-mode) service.

– The alternate address shall not be used for APC packet-mode (data) service.

– The relationship between the ICAO 24-bit technical address and the Inmarsat mobile number will be determined by means of an algorithmic association at the aeronautical ground earth station (GES).

A.3.3.3 Special facilities

In order to provide access to special facilities provided at Inmarsat aeronautical ground earth stations for fixed network subscribers, the following number format is to be used:

5 $X_1X_2X_3X_4X_5X_6X_7X_8$

for $X_1 = 9$, the digits $X_1 \ldots X_n$ are of variable length and used for the special purpose of identifying special facilities at the ground earth station,

where:

– X_2 ... X_n is for further study (tentatively, $X_2 = 6$ is reserved for special applications, which are unique to individual ground earth stations);

– access to ground earth station special facilities, using $X_1 = 9$, will be available from both packet switched public data network (PSPDN) and the public switched telephone network/ integrated service digital network (PSTN/ISDN); however, the definition and means to access the various facilities available, may be different for PSPDN and PSTN/ISDN access.

A.3.5 Future Inmarsat systems

T digits should be allocated for each new Inmarsat system in the future. If an earlier system is taken out of service, T digits allocated for that system may be reallocated to new systems.

If the capacity provided by the T digits of Table A.2 is not sufficient, then further capacity may be made available by using T = 9 followed by an additional digit (U) as follows:

9 U X_1X_2 ... X_k

where the digits X_1 ... X_k identify the mobile earth station and any extension connected to it. The digit U is used to identify new Inmarsat systems or for technical and operational reasons.

The Telecommunication Standardization Bureau (TSB) would be responsible for coordinating the allocation of new U digits with the competent Study Groups.

A.4 Digit analysis

If different routing or accounting applies to different Inmarsat systems, then the digits CCC T or CCC T_1T_2 need to be analysed at international exchanges.

If the routing capacity is increased by using T = 9 (see clause A.3.5), then the digits CCC9U need to be analysed.

The above requirements on number analysis are in compliance with [ITU-T E.164].

A.5 Presentation of Inmarsat mobile numbers in directories

A.5.1 General

Inmarsat mobile numbers may be published in separate directories or in separate sections of general directories.

In directories, only relevant Inmarsat mobile numbers, as specified in clause A.3.1, shall be listed. The country code to be used and instruction for the subscribers should be contained in general parts of the directories.

A.6 Use of ship station identification for maritime applications of systems operated by Inmarsat

A Reservation on the use of this clause is that the Inmarsat M, –mini-M and C systems depend on analysis of blocks 2 and 3 in Table A.2.

A.6.1 General

Article 19 of [ITU RR], ITU-R Recommendations and [ITU-R M.585-7] define an identification plan for ships participating in maritime mobile services. The ship station identity normally consists of nine digits and is composed as follows:

$$M_1I_2D_3X_4X_5X_6X_7X_8X_9$$

where the digits $M_1I_2D_3$ allocated to administrations determine the ship nationality. The other six digits can be in the range 000000 to 999999. The purpose of this identity is to identify the ship station over the radio path in the maritime mobile service. It has also been designed so that it can be used in an automatic environment for accessing ship stations through public switched networks.

For maritime applications, the number can be regarded as being composed of three blocks as in Table A.2.

Table A.2 – Number composed of three blocks

T	**X_1X_2 ... X_n**	**X_{n-1} ... X_k**
Block 1	Block 2	Block 3

In Table A.2, digit T is in block 1; the digits in block 2 are related to the ship station identity as explained in the following and block 3 contains digits that are used for other purposes (e.g., on-board identification). In some Inmarsat systems, block 3 may be empty.

NOTE – For Inmarsat-M and C systems, the digit X_1 may take either of the values 8 or 9 depending on the specific system to be used for future applications. In this case, the digits in block 2 are not related to the ship station identification plan.

A.6.2 Earlier constraints on ship station identification and numbering

A.6.2.1 Today the Inmarsat mobile number can consist of up to 15 digits, expanded from the original constraint of 12 digits after terrestrial network switching limitations were increased.

The numbering plan must cater for capabilities as follows:

– provision of a reasonable on-board identification capacity for calls to ship board terminal equipment connected to the ship earth station;
– possibility of several ship earth stations on the same ship where all ship earth stations have a number associated with the unique ship station identity of the ship;
– capability of supporting multichannel ship earth stations.

These capabilities may require digits in block 3 of the Inmarsat mobile number, thus reducing the available space for block 2.

A.6.3 Application of ship station identity

A.6.3.1 Digit capacity in block 2

The addressing capacity of C systems on the radio path originally catered for up to seven digits in block 2. However, the limited digit capacity of the terrestrial networks put the following initial constraints on the number of digits in block 2.

– For Inmarsat-M systems, the initial digit capacity in block 2 was six digits to allow sufficient capacity in block 3 for supporting the capabilities listed in clause A.6.2.1.The capacity of block 2 has since been extended to eight or nine digits.
– For the Inmarsat-C system, the initial digital capacity in block 2 is six digits to allow sufficient capacity in block 3 for supporting the possibility of identifying several pieces of terminal equipment connected to a ship earth station and of several ship earth stations on the same ship. In the future, the capacity of block 2 may be extended to seven or more digits.

A.6.3.2 Mapping between the ship station identity and the digits in block 2

The initial mapping between the ship station identity and the digits in block 2 is shown in Table A.3.

For ship earth stations, the ship station identity was thus derived from the digits in block 2 by adding 0s at the end until the identity consists of nine digits.

In order to distinguish between Inmarsat mobile numbers consisting of 9 and 12 digits (if they coexisted), the digit X_7 of the ship station identity, the eighth digit of the Inmarsat mobile number took the fixed value 0. This constraint is no longer valid when only 12-digit numbers exist (see also clause A.8).

The digit T in block 1 determines the type of ship earth station and, implicitly, the number of digits in block 2. The relationship is shown in Table A.4. Further details of the number structure are given in the text of this Annex.

Table A.3 – Mapping between ship station identity and digits in block 2 of the mobile station number

Ship station identity			**XXX XXX 000**	**XXX XXX 0X0**	**XXX XXX 0XX**
Block 2 mapping	Size of block 2	Six digits	XXX XXX	Mapping not possible	Mapping not possible
		Seven digits	XXX XXX 000	Mapping not possible	Mapping not possible
X Any digit between 0 and 9. 0 Zero.					

Table A.4 – Relationship between the T digit(s) and the format of the ship station identity in a 12-digit Inmarsat mobile international number

Value of T digit(s)	Inmarsat standard system	Number of digits in block 2	Format of ship station identity
0			
1			
2	Reserved	–	–
3			
4	C	6	XXX XXX 000
5	Aeronautical	(Note)	(Note 1)
6			
70-75 and 79	Reserved	–	–
76			–
8			
9	Future expansion	Further study	Further study
NOTE – The numbering plan for the aeronautical satellite service is not related to the ship station identification plan of Article 19 of [ITU RR] and [ITU-R M.585-7].			

A.6.3.3 Ships equipped with several Inmarsat systems

The ship station identity for such ships is the one derived from the ship earth station of a specific Inmarsat system having the smallest size of block 2. This applies only if the numbering plans for the ship earth station of the specific Inmarsat systems are related to the ship station identification plan.

A.7 Group call numbering scheme for Inmarsat systems

A.7.1 Categories for group call services

At present, four different categories of group call service have been envisaged within the maritime mobile satellite service.

A.7.1.1 National group calls

The category is defined to address all ships of the same nationality.

A.7.1.2 Fleet group calls

This category is defined to address all ships within one fleet.

A.7.1.3 Selected group calls

This category is defined to address a number of ships having a community of interest irrespective of nationalities or fleets, and forming a predefined group.

A.7.1.4 Area group calls

This category is defined to address all ships of any nationality located within a predetermined geographical area.

A.7.2 Group call formats

A.7.2.1 The general group call format is

$$TX_1X_2X_3X_4X_5X_6X_7X_8.$$

For InmarsatM, –mini-M and Inmarsat Aeronautical, the format of the digits X_1 ... X_8 is for further study.

A.7.2.2 The MIDs in national and fleet group numbers are those allocated in Article 19 of [ITU RR], ITU-R Recommendations and [ITU-R M.585-7].

A.7.2.3 In accordance with Article 19 of [ITU RR] and [ITU-R M.585-7], the particular MID reflects only the country allocating the group call identity and therefore does not prevent group calls to fleets containing more than one ship nationality. Allocation of selected group numbers should be avoided when the same group could equally well be assigned a fleet group number.

A.7.2.4 National group numbers and fleet group numbers should be allocated by countries. Selected group numbers and area group numbers as applicable to Inmarsat systems should be allocated by Inmarsat; allocation of such numbers may require cooperation with other organizations.

A.7.2.5 A country having assigned a national group or fleet group number should notify the Director General of Inmarsat if those numbers are going to be used within Inmarsat systems.

A.8 Structure of the on-board identification digits in the Inmarsat numbering plan

A.8.1 Introduction

Within the numbering scheme, two digits Z_1Z_2 have been allocated (see clauses A.3.3.2 and 3.2.3) to on-board identification. The purpose of these digits is to provide means for identifying different ship earth stations on the same ship and different instruments, e.g., telephone instrument and a facsimile machine, connected to the same ship earth station.

The maximum length of the Inmarsat mobile international number has been extended from 12 to15 digits in accordance with [ITU-T E.164].

It is considered that the foregoing aspects can be met by careful selection of the significance and values of Z_1Z_2.

A.8.2 Proposed structure

As outlined earlier, it is necessary for Z_1Z_2 to achieve two identification roles, i.e., station and instrument. It is considered that this can be accomplished by allocating Z_1 to multi-ship earth station identification and Z_2 to multi-instrument identification.

This structure permits the uniform allocation of numbers to be achieved and allow the growth of ship earth stations to be independent of the growth of instruments on any one ship earth station.

Further, it is proposed that Z_1 should never be equal to 0 (zero) and the eighth digit of a 12-digit ship earth station number should always be equal to 0 (zero) as long as 12 digit and 15 dig–t -number lengths coexist for the same value of T digit, i.e.

– T MID $XXXZ_1Z_2$ (nine digits with $Z_1 \neq 0$).

– T MID $XXX0XXZ_1Z_2$ (12 digits).

This approach allows the unambiguous identification of 9-digit and 12-digit ship earth station numbers on the same T digit.

NOTE – The above constraint on the eighth digit will not be required when only 12-digit numbers exist in Inmarsat systems.

A.8.3 Allocation

Therefore, from clause A.8.2, a ship with one ship earth station and one instrument Z_1Z_2 would equal 10. If another instrument were added, then Z_1Z_2 would equal 11 for this instrument.

If a ship had two earth stations of the same standard and one instrument attached to each, then the values of Z_1Z_2 would be 10 for one station, and 20 for the second station. If a second instrument were added to the second station, then the value of Z_1Z_2 would be 21 for this instrument.

Should it be necessary to allocate more than 10 instruments per ship earth station, then another value of Z_1 would be allocated to the earth station, e.g. for instrument 10, Z_1Z_2 would be equal to 19 and for the eleventh instrument 20 would be allocated the next free value Z_1.

Table A.5 gives some illustrations of the above allocations.

Table A.5 – Examples of Z_1Z_2 allocation for ship earth stations with the same T digit

Ship earth station	Instrument	Z_1	Z_2
Multi-ship earth stations			
X Y	Telephone Telephone	1 2	0 0
Multi-ship earth stations and multi-instruments			
X	Telephone	1	0
	Facsimile	1	1
Y	Telephone	2	0
Z	Telephone	3	0
	Facsimile	3	1
	Telephone	3	2
	Telephone	3	3
X	Telephone	1	0
	Telephone	1	1
	Facsimile	1	2
	Telephone	1	9
	Telephone	3	0
Y	Telephone	2	0
	Facsimile	2	1
Z	Telephone	4	0

Annex B[2]

Numbering plan for access to the mobile-satellite services of Inmarsat from the international telex service

B.1 Introduction

B.1.1 Purpose

This annex specifies a telex numbering plan for mobile earth stations in systems operated by Inmarsat. Such systems may include maritime land and aeronautical satellite systems. In the future, the range of mobile satellite systems may also include satellite systems for other applications.

B.1.2 Terminological conventions

The following terminological conventions are used within this annex.

B.1.2.1 ship station identity: As defined in Article 19 of [ITU RR], ITU-R Recommendations, [ITU-R M.585-7] and clause 3 of this Recommendation.

B.1.2.2 Inmarsat mobile international number: The addressing information, excluding any prefix, comprising a telex destination code and Inmarsat mobile number, used to access a terminal equipment connected to an Inmarsat mobile earth station from the international telex service.

B.1.2.3 Inmarsat mobile number: The part of the Inmarsat mobile international number that follows the telex destination code allocated to an Inmarsat satellite region.

B.1.2.4 Inmarsat mobile terminal number: The part of the Inmarsat mobile number that identifies a specific piece of terminal equipment connected to the mobile earth station.

B.1.2.5 other definitions: For definition of terms such as maritime mobile-satellite service, aeronautical mobile-satellite service, ship earth station, etc., see [ITU RR].

B.1.3 Basic considerations

The considerations which form the basis for the numbering plan are given in clauses B.1.3.1 to B.1.3.10.

B.1.3.1 It should be possible to identify a mobile earth station, uniquely from the Inmarsat mobile number.

B.1.3.2 The Inmarsat mobile number should have a format such that the same number could be used for access from all types of public network.

B.1.3.3 The number of telex destination codes listed in [ITU-T F.69] required for supporting future Inmarsat requirements should be as small as possible.

B.1.3.4 Different routings may be used for calls to mobile earth stations designed to different Inmarsat system standards.

B.1.3.5 Recognized operating agencies and Inmarsat may apply different charging and accounting rates to different Inmarsat system standards.

B.1.3.6 The numbering plan should provide capacity for the identification of terminal equipment connected to a mobile earth station.

B.1.3.7 The numbering plan should support access to multichannel mobile earth stations.

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[2] This annex cancels and replaces [b-ITU-T F.125].

B.1.3.8 The length of the Inmarsat mobile international number should not exceed 12 digits to comply with [ITU-T U.11] and [ITU-T U.12].

B.1.3.9 For maritime-satellite applications, the ship station numbering plan should support access to several ship earth stations in the same ship within one ship station identity.

B.1.3.10 [ITU RR] should make provision for the allocation of additional MIDs for a specific country, when necessary.

B.2 Format of Inmarsat mobile international number

The format of the Inmarsat mobile international number is:

$$CCCT\ X_1 \ldots X_k$$

where CCC is the telex destination code, in accordance with [ITU-T F.69], allocated to Inmarsat and T X_1 ... X_k is the Inmarsat mobile number. The format of the Inmarsat mobile number is given in clause B.4.

NOTE – The Inmarsat mobile international number will vary depending on the satellite region selected by the caller in which connection with the MES is to be attempted.

B.3 Telex destination codes for Inmarsat

The telex destination codes (see [ITU-T F.69]) allocated for Inmarsat are shown in Table B.1.

Table B.1 – Telex destination codes for Inmarsat

Telex destination code	Geographical destination
581	Atlantic-east satellite region, Inmarsat
582	Pacific satellite region, Inmarsat
583	Indian satellite region, Inmarsat
584	Atlantic-west satellite region, Inmarsat

B.4 Format of Inmarsat mobile number

B.4.1 General format

B.4.1.1 The general format of the Inmarsat mobile number is:

$$T\ X_1X_2 \ldots X_k$$

where the digit T is used for discrimination between different Inmarsat systems.

The formats used for the various Inmarsat systems are defined in the following. The values of the T digits are summarized in Table B.2.

The T digits represent a limited resource and a new T digit should therefore only be allocated when necessary for technical or operational reasons.

The TSB is responsible for coordinating the allocation of new T (or U) (see clause B.4.4) digits with the competent Study Groups.

B.4.1.2 To meet the requirements of the international telex service, and, in particular, the signalling conditions specified in [ITU-T U.11] and [ITU-T U.12], the Inmarsat mobile number should not contain more than nine digits.

Table B.2 – Value of T digit for various applications

T digit	Application
0	
1	
2	Reserved for future use
3	
4	Ordinary call in Inmarsat-C, see clause B.4.2
5	Ordinary call in Inmarsat aeronautical system, see clause B.4.3
6	
70-75 and 79	Reserved for future use
77-78	BGAN/GSPS/GX
8	
9	Reserved for future expansion, see clause B.4.4

B.4.2 Format of the Inmarsat mobile number for the Inmarsat-C system

B.4.2.1 Ordinary calls – Maritime mobile

The format of the Inmarsat mobile number used for ordinary calls to mobile earth stations in Inmarsat-C system, shall be as follows:

$$4\ M_1I_2D_3X_4X_5X_6X_7X_8 \text{ (nine digits)}$$

where 4 corresponds to the T digit and where at least the digits $M_1I_2D_3X_4X_5X_6$ are part of the ship station identity. The digits X_7X_8 may also be part of the ship station identity or be used to discriminate between several ship earth stations on the same ship.

The number format is:

$$4\ X_1X_2X_3X_4X_5X_6X_7X_8 \text{ (nine digits)}$$

B.4.2.2 Ordinary calls – Land mobile

The format of the Inmarsat mobile number used for ordinary calls to land-based mobile earth stations in the Inmarsat-C system, shall be as follows:

$$4\ 8\ M_2C_3C_4X_5X_6X_7X_8 \text{ (nine digits)}$$

where 4 corresponds to the T digit, digit 8 signifies a land-based mobile earth station and the digits $M_2C_3C_4$ correspond to the mobile country codes listed in [ITU-T Comp E.212].

B.4.2.3 Group calls

Group call selection in the Inmarsat-C system is achieved using two stage access procedures that do not conform to the scheme outlined in clause B.8.

B.4.3 Format of the Inmarsat mobile number for the Inmarsat aeronautical system

The general format of Inmarsat mobile numbers in the Inmarsat aeronautical system is as follows:

$$5\ X_1X_2X_3X_4X_5X_6X_7X_8 \text{ (nine digits)}$$

where 5 corresponds to the T digit.

The format of the digits X_1 through X_8 is still to be determined.

B.4.4 Future Inmarsat systems

T digits will be allocated for each new Inmarsat system in the future. If an earlier system is taken out of service, T digits allocated for that system may be reallocated to new systems.

If the capacity provided by the T digits of Table B.2 is not sufficient, further capacity may be made available by using T = 9 followed by an additional digit (U) as follows:

$$9\ U\ X_1X_2\ ...\ X_k$$

where the digits X_1 ... X_k identify the mobile earth station and any extension connected to it. The digit U is used to identify new Inmarsat systems or for technical and operational reasons (see clause B.6).

B.5 Digit analysis

If different routing or accounting arrangements are applied to different Inmarsat systems, the digits CCCT will need to be analysed at international exchanges.

If the routing capacity is increased by using T = 9 (see clause B.4.4), the digits CCC9U need to be analysed and this is for further study.

B.6 Presentation of Inmarsat mobile numbers in directories

B.6.1 General

Inmarsat mobile numbers may be published in separate directories or in separate sections of general directories.

In directories, only the relevant Inmarsat mobile numbers, as specified in clause B.4.1, shall be listed. The telex destination code to be used and instruction for the subscribers should be contained in general parts of the directories.

B.7 Use of ship station identification for maritime applications of systems operated by Inmarsat

Reservation on the use of this annex. The Inmarsat- C system depend on analysis of blocks 2 and the text in clauses B.7.1 to B.7.3 is therefore the subject of further study.

B.7.1 General

Article 19 of [ITU RR] and [ITU-R M.585-7] define an international identification plan for ships participating in the maritime mobile services. The ship station identity consists of nine digits and is composed as follows:

$$M_1I_2D_3X_4X_5X_6X_7X_8X_9$$

where the digits $M_1I_2D_3$ determine the ship's nationality.

For ships participating in systems operated by Inmarsat, the main part of this Recommendation specifies a format of the Inmarsat mobile number as follows:

$$T\ X_1X_2\ ...\ X_k$$

For maritime applications, the number can be regarded as being composed of three blocks as shown in Table B.3.

Table B.3 – Number composed of three blocks

T	**X_1X_2 ... X_n**	**X_{n+1} ... X_k**
Block 1	Block 2	Block 3

where the digit in block 1 is the digit T, the digits in block 2 are related to the ship station identity as explained in clauses B.7.2 and B.7.3, and block 3 contains digits which are used for other purposes (e.g., Inmarsat mobile terminal number). In some Inmarsat systems, block 3 may be empty.

For the Inmarsat-C system, the digit X_1 may take the values 8 or 9 for non-maritime applications. In this case, the digits in block 2 are not related to the ship station identification plan.

B.7.2 Constraints on ship station identification and numbering

B.7.2.1 To meet the requirements of the international telex service, and in particular the signalling conditions specified in [ITU-T U.11] and [ITU-T U.12], the Inmarsat mobile number should not contain more than nine digits.

B.7.2.2 The new numbering plan must cater for the following:

– identification for calls to ship-board terminal equipment connected to the ship earth station;

– the possibility of several ship earth stations on the same ship where all ship earth stations have a number associated with the unique ship station identity of the ship;

– the capability to support multichannel ship earth stations.

These capabilities may require digits in block 3 of the Inmarsat mobile number, thus reducing the available space for block 2.

B.7.3 Applications of ship station identity

B.7.3.1 Digit capacity in block 2

The addressing capacity of Inmarsat-C systems on the radio path can cater for up to seven digits in block 2. However, the limited digit capacity of the terrestrial networks initially put the following initial constraints on the number of digits in block 2 prior to the expansion from 12 to 15 digit maximum number length.

– for the Inmarsat-C system, the initial digital capacity in block 2 was six digits to allow sufficient capacity in block 3 to support the possibility of identifying several pieces of terminal equipment connected to a ship earth station and of several ship earth stations on the same ship.

B.7.3.2 Mapping between ship station identity and digits in block 2

The initial mapping between ship station identity and digits in block 2 is shown in Table B.4.

Table B.4 – Mapping between ship station identity and digits in block 2 of the Inmarsat mobile station number

Ship station identity			**XXX XXX 000**	**XXX XXX 0X0**	**XXX XXX 0XX**
Block 2 mapping	Size of block 2	Six digits	XXX XXX	Mapping not possible	Mapping not possible
X Any digit between 0 and 9 0 Zero					

For ship earth stations, the ship station identity was thus derived from the digits in block 2 by adding 0s at the end until the identity consists of nine digits.

The digit T in block 1 determines the type of ship earth station and, implicitly, the number of digits in block 2. The relationship is shown in Table B.5. Further details of the number structure are given in Annex A.

Table B.5 – Relationship between the digit T and the format of the ship station identity in 12 digit Inmarsat mobile international numbers

Value of digit T	Inmarsat standard system	Number of digits in block 2	Format of ship station identity
0			
1			
2	Reserved	–	–
3			
4	C	6	XXX XXX 000
5	Aeronautical	(Note)	(Note)
6			
7	Reserved	–	–
8			
9	Future expansion	Further study	Further study
NOTE – The numbering plan for the aeronautical-satellite service is not related to the ship station identification plan of Article 19 of [ITU RR] and [ITU-R M.585-7].			

B.7.3.3 Ships equipped with several Inmarsat systems

The ship station identity for such ships is that derived from the ship earth station standard having the smallest size of block 2. This applies only if the numbering systems for ship earth station standards are related to the ship station identification plan.

B.8 Group call numbering scheme for the Inmarsat system

B.8.1 Categories for group call services

At present, four different categories of group call service have been envisaged within the maritime mobile-satellite service.

B.8.1.1 National group calls

The category is defined to address all ships of the same nationality.

B.8.1.2 Fleet group calls

This category is defined to address all ships within one fleet.

B.8.1.3 Selected group calls

This category is defined to address a number of ships having a community of interest irrespective of nationalities or fleets, and forming a predefined group.

B.8.1.4 Area group calls

This category is defined to address all ships of any nationality located within a predetermined geographical area.

B.8.2 Group call formats

B.8.2.1 The MIDs in national and fleet group numbers are those allocated in Article 19 of [ITU RR] and [ITU-R M.585-7].

B.8.2.2 In accordance with Article 19 of [ITU-T RR], the particular MID reflects only the country allocating the group call identity and, therefore, does not prevent group calls to fleets containing more than one ship nationality. Allocation of selected group numbers should be avoided when the same group could equally well be assigned a fleet group number.

B.8.2.3 National group numbers and fleet group numbers should be allocated by country. Selected group numbers and area group numbers as applicable to the Inmarsat system should be allocated by Inmarsat: allocation of such numbers may require cooperation with other organizations.

B.8.2.4 A country having assigned a national group or fleet group number should notify the Director-General of Inmarsat if those numbers are going to be used within the Inmarsat system.

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